hazardous substances & Public Health

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Secretary Sullivan Announces New Guidelines for Lead

Department of Health and Human Services Secretary Louis W. Sullivan, M.D., announced in October a new and lower "threshold of concern" for lead levels in children's blood. This new level is set at 10 micrograms per deciliter (μg/dL) of whole blood — less than half the level of 25 identified by the Centers for Disease Control (CDC) in 1985.

The change was necessary because new data show that levels previously considered safe "are in fact associated with significant adverse effects," Secretary Sullivan said. "We have made considerable progress in lowering blood lead levels. But with these new findings, we owe it to our children to work together toward further improvement. We need to identify and treat youngsters with high blood lead levels, and we need to keep working in our communities to control childhood lead exposure," said Secretary Sullivan. The policy change, set forth in the CDC's revised statement

> ***"We need to identify and treat youngsters with high blood lead levels, and we need to keep working in our communities to control childhood lead exposure."***

Preventing Lead Poisoning in Young Children, provides guidelines for action by diverse groups, including public health officials, pediatricians, government agencies, and private citizens. The new threshold represents a new goal for low blood lead levels toward which the nation should move for all children, especially through community prevention measures, according to Secretary Sullivan.

Preventing Lead Poisoning replaces the single, all-purpose definition of lead poisoning with "levels of action" at which different interventions should be triggered by specific levels of lead in the blood of exposed children, with highest priority given to children with the highest blood lead levels (see Table 1, page 2).

Copies of the statement, *Preventing Lead Poisoning in Young Children — 1991*, are available free of charge from Publication Activities, Office of the Director, National Center for Environmental Health and Injury Control, CDC, Mailstop F29, 1600 Clifton Rd., NE, Atlanta, GA 30333.

Researchers Eye Simpler Tests for Low Lead Levels

Scientists at the University of Maryland at Baltimore (UMAB) are working to develop an inexpensive and noninvasive new test that may aid in determining if children have low but damaging levels of lead in their bodies.

What's wrong with the current test? The erythrocyte protoporphyrin (EP) test is not a sensitive test to identify children with blood lead levels below about 25 μg/dL, and therefore it is no longer the screening test of choice. [The new CDC guidelines set the threshold of concern for lead exposure at 10 μg/dL and suggest follow-up of individual children with blood lead levels of 15 μg/dL or greater.]

The measurement now being used instead of the EP test—a blood lead level—has two disadvantages: it's expensive and invasive. The EP test costs only $7 to $10, but a blood lead level is $20 to $30. Furthermore, the blood lead level requires drawing blood from the child's arm, a traumatic procedure for children under 6. "This issue seems trivial and simple," said Dr. Sue Binder, chief of the CDC's lead poisoning prevention branch, "but it is actually quite significant."

Through a grant sponsored by the Maryland Department of the Environment and ATSDR, toxicologists Bruce Fowler and Ellen Silbergeld are leading a team of scientists in a search for biomarkers of lead exposure that could point to possible new screening methods. The goal of the project is to make these tests inexpensive and easy to perform.

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Table 1. Interpretation of blood lead test results and follow-up activities: class of child based on blood lead concentration

Class	Blood lead concentration (μg/dL)	Comment
I	≤ 9	A child in Class I is not considered to be lead-poisoned.
IIA	10-14	Many children (or a large proportion of children) with blood lead levels in this range should trigger communitywide childhood lead poisoning prevention activities. Children in this range may need to be rescreened more frequently.
IIB	15-19	A child in Class IIB should receive nutritional and educational interventions and more frequent screening. If the blood lead level persists in this range, environmental investigation and intervention should be done.
III	20-44	A child in Class III should receive environmental evaluation and remediation and a medical evaluation. Such a child may need pharmacologic treatment of lead poisoning.
IV	45-69	A child in Class IV will need both medical and environmental interventions, including chelation therapy.
V	≥70	A child with Class V lead poisoning is a medical emergency. Medical and environmental management must begin immediately.

Source: CDC, *Preventing Lead Poisoning in Young Children*, October 1991, page 3.

"If you look at how lead interacts with cellular systems, you can think about what would be useful" in terms of tests, according to Dr. Fowler. His researchers are exploring two paths through animal studies: a change in calcium-binding proteins derived from bone that are detectable in the blood, and an increase in lead-binding proteins from the kidneys that can be found in the urine.

Chemically similar proteins have been found in humans. The researchers are now collecting data and biological samples from several human populations so that biological responses to lead exposure found in rats can be compared to responses in humans. "What we think will happen [after the comparison] is that we'll have several new tests that will be sensitive into the range the public health community needs."

When will the new tests be available? "We're hopeful that we'll have some validated, sensitive tests that'll replace the ones in current use within a year or two," says Dr. Fowler. "There is some reason for optimism in what we've seen so far." If these tests prove useful, they would also avoid the problems of lead contamination which may confound accurate blood lead measurements at low blood lead levels.

Other efforts are under way to improve testing. CDC is working to develop methods for collecting capillary blood that is not contaminated with lead, so a lead test could be done on blood collected by a fingerstick. CDC is also working with private industry to develop a cheaper and easier-to-use method for blood lead measurement. A new instrument is expected to be available within the next couple of years as a result of such projects.

Until a simpler test can be devised, CDC recommends that universal testing be phased in, giving priority to children at highest risk for lead poisoning (see Figure 1, page 3). An exception is made for communities where blood lead testing has shown that no childhood lead poisoning problem exists.

For more information about the lead biomarker study, please contact Bruce Fowler, Ph.D., or Ellen Silbergeld, Ph.D., Toxicology Program, University of Maryland, 660 West Redwood St., Baltimore, MD 21201; telephone (410) 328-8196, fax (410) 328-6203; or Boon Lim, M.D., M.P.H., State of Maryland Department of the Environment, 2500 Broening Highway, Baltimore, MD 21224; telephone (410) 631-3852, fax (410) 631-3198.

Figure 1. Priority Groups For Screening

- Children, ages 6 to 72 months, who live in or are frequent visitors to deteriorated housing built before 1960.
- Children, ages 6 to 72 months, who live in housing built before 1960 with recent, ongoing, or planned renovation or remodeling.
- Children, ages 6 to 72 months, who are siblings, housemates, or playmates of children with known lead poisoning.
- Children, ages 6 to 72 months, whose parents or other household members participate in a lead-related occupation or hobby.
- Children, ages 6 to 72 months, who live near active lead smelters, battery recycling plants, or other industries likely to result in atmospheric lead release.

Source: CDC, *Preventing Lead Poisoning in Young Children*, October 1991.

For information about CDC lead studies, please contact Sue Binder, M.D., Chief, Lead Poisoning Prevention Branch, Division of Environmental Hazards and Health Effects, National Center for Environmental Health and Injury Control, CDC, Mailstop F28, 1600 Clifton Rd., NE, Atlanta, GA 30333; telephone (404) 488-4880, fax (404) 488-4308.

Site-Specific Initiative Aims To Protect Children's Health

Lead contamination creates special concerns for Superfund communities because of the hazards lead poses for children. ATSDR is currently reviewing 13 sites where public health assessments have indicated the presence of lead to re-examine site conditions and to determine if health follow-up actions are needed to protect public health. "We're going back to these sites to see if any additional actions are needed to protect public health," says Bob Williams, director of ATSDR's Division of Health Assessment and Consultation (DHAC). "We want to know if there is potential for human exposure to environmental lead contamination, particularly at exposure levels previously thought to be without health consequences. Are any populations at risk of exposure to lead?"

"We want to be absolutely sure that any actual exposures end and [that] potential exposures are prevented, because the effects of lead on children are so severe and extensive," says ATSDR toxicologist Dr. Adrienne Hollis-Hughes, primary resource person for the reassessment effort.

By initiating appropriate follow-up actions, the site-specific initiative seeks to prevent lead toxicity in young children exposed to lead from Superfund sites. Some possible follow-up actions include the following:

- developing health education programs on the health effects of lead for local health officials and/or community groups, and
- preparing addenda to health assessments, conducting health consultations, or issuing public health advisories as needed.

The 13 sites were selected for reassessment because the health assessments for those sites reported lead contamination and concluded that the sites threaten public health. That conclusion, however, may not have been based solely on the lead hazard. The systematic review will take place in phases; a second set of sites is now being selected. The next phase of the initiative began in January 1992.

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Continued from page 3

The review of the 13 sites began with ATSDR regional representatives' using questionnaires to gather current site information from knowledgeable persons at the Environmental Protection Agency and at state health departments. The completed questionnaires provided information on the following: current site conditions, local residents' recreational activities on the site, populations potentially at risk, multiple sources of lead contamination, reports of community health concerns, and implementation of ATSDR health assessment recommendations. The questionnaires also indicated gaps in site-related information.

After reviewing the information gained from the questionnaires, ATSDR staff planned site visits so they could examine current site conditions. They also obtained relevant environmental and health data from the appropriate government officials.

In states that have health assessment cooperative agreements with ATSDR, site activities are coordinated with the state health department. In addition to accompanying ATSDR personnel on the site visit, officials from a cooperative agreement state may provide insight into the local situation based on personal knowledge of the state's ongoing health assessment activities.

As of November 1991, site visits had been conducted at eight sites. Reviewers are now evaluating data and information resulting from the site visit to determine the status of the eight sites. Summary reports for each site will include that evaluation.

The summary report, along with earlier health assessment documents and any other significant reports, will be presented to the ATSDR Health Activities Recommendation Panel (HARP) for final review, and for recommendations on any needed health follow-up activities. HARP has considered seven sites so far and panel members will review the remaining six sites within the following few months. The final decision on appropriate health follow-up activities and any other ATSDR actions will be available after the HARP meeting.

For more information on the site-specific initiative, contact Dr. Sharon Williams-Fleetwood, ATSDR, Mailstop E32, 1600 Clifton Road, NE, Atlanta, GA 30333; telephone (404) 639-0607.

Definitions

*A **health consultation** is a response to a specific question or request for information pertaining to a hazardous substance or facility (which includes waste sites). It often contains a time-critical element that necessitates a rapid response; therefore, it is a more limited response than an assessment.*

*A **public health advisory** is a statement by ATSDR containing a finding that a release of hazardous substances poses a significant risk to human health and recommending measures to be taken to reduce exposure and eliminate or substantially mitigate the significant risk to human health (55 Federal Register 5136, February 13, 1990).*

*A **public health assessment** is the evaluation of data and information on the release of hazardous substances into the environment in order to assess any current or future impact on public health, develop health advisories or other recommendations, and identify studies or actions needed to evaluate and mitigate or prevent human health effects (55 Federal Register 5136, February 13, 1990); also the document resulting from that evaluation.*

Site-Specific Review

ATSDR established its site-specific initiative to systematically review public health assessments in which site-related lead contamination has been documented. Health assessments often describe areas that have been contaminated with a wide range of chemicals. Lead is a primary contaminant at many sites across the country.

A 1988 ATSDR publication, **The Nature and Extent of Lead Poisoning in Children in the United States: A Report to Congress**, showed children and developing fetuses to be especially susceptible to lead toxicity. The report made specific recommendations for mitigating and preventing the harmful effects of environmental lead exposures.

From The States...

Kentucky

Where can you find out about a drug that promises to simplify the management of childhood lead poisoning? What about an organization formed to establish lead testing and abatement guidelines? Or a coloring book for children, "My Book About Staying Safe Around Lead"? The answers are contained in LEADLINES, a newsletter produced by the Jefferson County Health Department and the Kentucky Department for Health Services, Division of Maternal and Child Health.

LEADLINES is distributed to 1,800 readers who are involved in childhood lead programs across the nation. The publication is supported in part by a project from the Maternal and Child Health program (Title V, Social Security Act), Health Resources and Services Administration, Department of Health and Human Services.

Published twice a year, LEADLINES includes articles on such topics as effects of lead on children, changes in lead standards, methods of treatment for children, abatement of lead in the environment, and reports from the Environmental Protection Agency, the Centers for Disease Control, and other agencies involved in childhood lead poisoning prevention and lead exposure.

The technical editors of LEADLINES are Dr. Jane Lin-Fu, pediatric consultant, U.S. Division of Maternal and Child Health, and Dr. J. Routt Reigart, associate professor, Medical University of South Carolina.

Copies for those involved in childhood lead programs may be requested from the editor, Judy S. Nielsen, c/o The Childhood Lead Program, Jefferson County Health Department, 400 E. Gray St., Louisville, KY 40202; telephone (502) 625-6525; fax (502) 625-5734. Articles for publication in LEADLINES may be submitted through the same office.

Missouri

A poster about lead will soon be available for pediatricians' waiting rooms in the Jasper County Superfund area in Missouri. "The poster will make patients aware of what factors may make a child a high risk for lead poisoning and that they should ask their physician if they have questions about testing or symptoms," says Kathleen Allen, an environmental specialist in the Missouri Department of Health.

The poster was the idea of a pediatrician who participated in one of three focus groups hosted by the Department in June 1991. On the basis of feedback from these focus groups, Missouri, in cooperation with the Kansas Department of Health and Environment, is developing other educational materials about the health effects of lead:

- a 1-page desk reference for physicians listing risk factors for lead poisoning, screening protocols, diagnostic testing recommendations, and medical intervention levels;
- a packet of lead poisoning reference articles to place in hospital libraries; and
- a reference/resource manual for distribution at lead education presentations. The manual contains information on risk factors for lead poisoning, screening protocols, diagnostic testing recommendations, and medical interventions.

These materials will be distributed within the Jasper County Superfund area to physicians (86 MDs, 38 DOs), school nurses (16), public health nurses (11), local health departments (3), and hospitals (5).

The Department also hosted a pilot health education presentation in September at Sale Memorial Hospital in Neosho, MO. The six physicians who participated heard preliminary results of a county blood serum study that found some incidence of elevated blood lead and a discussion of the clinical treatment aspects of lead poisoning, new levels of concern, follow-up protocols, and chelation therapy.

For more information, please contact Kathleen Allen, MS, Environmental Specialist, Missouri Department of Health, Bureau of Environmental Epidemiology, P.O. Box 570, 1730 E. Elm, Jefferson City, MO 65102; telephone (314) 751-6102; fax (314) 751-6010.

Rhode Island

Although the public has become increasingly aware of and concerned about hazardous substances in the home, the workplace, and the general environment, physicians and other health care professionals may be reluctant to learn about hazardous substance exposures. In Rhode Island, the community's right to know has driven physician education about lead exposure and lead poisoning prevention. "Physicians who are approached

by patients with questions realize they need to be better informed," says Bela Matyas, M.D., M.P.H., chief of the Office of Environmental Health Risk Assessment, Rhode Island Department of Health.

After surveying physicians about the kind of information needed, resources used, and preferred educational forums, the Department decided to offer environmental health education in the form of grand rounds presentations. Through a cooperative agreement with ATSDR, Rhode Island conducted the following grand rounds in 1991:

- "Childhood Lead Exposure: Sources, Developmental Impact and Prevention";
- "Environmental Carcinogens in Rhode Island: Evaluation and Implications for Primary Care";
- "The Risk of High and Low Lead Exposure and Associated Toxicity Among Children and Adults in the General Population: A Paradigm for Environmental Medicine";
- "Current and Future Trends in the Management of Childhood Lead Poisoning";
- "Environmental Exposures and Risk Management";
- "Environmental Carcinogens in Rhode Island: Evaluation and Implications for Physicians";
- "Childhood Lead Poisoning: An Update"; and
- "Environmental Health for the Practitioner: What You Need to Know."

According to Dr. Matyas, "there's been a tenfold increase in the number of doctors contacting the office for more information" on environmental health as a result of the grand rounds. The Department has also created a lead response protocol for physicians to use.

For more information, please contact Robert Vanderslice, Ph.D., Rhode Island Department of Health, Office of Environmental Health and Risk Assessment, 3 Capitol Hill, Providence, RI 02908-5097; telephone (401) 277-3424; fax (401) 277-6953.

Resources on Lead and Lead-Related Issues

Information on lead is available from a number of sources and on a number of topics. Some of these are listed below.

Lead in Drinking Water

The Water Quality Association, P.O. Box 606, Lisle, IL 60532, has information on home water filtration systems.

The United States Environmental Protection Agency (EPA) operates a Safe Drinking Water Hotline (800-426-4791; 202-382-5533 in Washington, DC) for answers to questions about water supply policies and regulations. A publication called "Lead and Your Drinking Water" is available from EPA.

Lead Poisoning in Children

The Centers for Disease Control, Public Inquiries, 1600 Clifton Rd., NE, Atlanta, GA 30333, (404) 488-4880, has available copies of *Preventing Lead Poisoning in Young Children.* (See related story, page 1.)

The Agency for Toxic Substances and Disease Registry, Division of Health Education, 1600 Clifton Rd., NE, Atlanta, GA 30333, (404) 639-6204, offers the publication, *The Nature and Extent of Lead Poisoning in Children in the United States: A Report to Congress.*

For information and referrals regarding lead poisoning in children, contact the Alliance To End Childhood Lead Poisoning, 600 Pennsylvania Ave., SE, Suite 100, Washington, DC 20003, (203) 543-1147.

Lead in Paint

The U.S. Consumer Product Safety Commission, Washington, DC 20207, offers a pamphlet, "What You Should Know About Lead-Based Paint in Your Home."

A "Manual for the Safe Removal of Lead Paint" is available from the New Jersey Department of Health's (NJDOH's) Accident Prevention and Poison Control Program. For a copy of the manual or for further information on the removal and clean-up of lead paint, please contact the Accident Prevention and Poison Control Program, NJDOH, CN 364, Trenton, NJ 08625; (609) 292-5666.

Lead Hazards in the Workplace

Private and federal employees seeking information on exposure to lead in the workplace should contact their Occupational Safety and Health Administration (OSHA) regional or area office. Other public employees should contact their state health department.

Lead Abatement

The Environmental and Occupational Health Sciences Institute–Center for Education and Training in Piscataway, NJ, offers a lead abatement course called "Identification and Abatement of Lead-Based Hazards." For more information, please contact the course registrar at 45

Knightsbridge Rd., Brookwood II, Piscataway, NJ 08854; (908) 463-5062/5064.

The National Lead Abatement Council is an organization devoted to cultivating an industry response to lead abatement needs. For a list of contractors involved or for other lead abatement information, please contact the Council at 105 Campus Drive, Princeton NJ 08543; (609) 520-1414.

From: *INFOletter,* Resource Center, Environmental and Occupational Health Sciences Institute, Public Education & Risk Communication Division, 45 Knightsbridge Rd., Brookwood II, Piscataway, NJ 08854-3923; telephone (908) 463-5353; fax (908) 463-5133.

Calendar

February

Feb. 23-27: Society of Toxicology: 31st Annual Meeting, Seattle, Washington. *Contact:* Clarissa Russell, SOT, 1101 14th St., NW, Washington, DC 20005; telephone (202) 371-1393; fax (202) 371-1090.

March

Mar. 14-18: American Pharmaceutical Association: 139th Annual Meeting, San Diego, California. *Contact:* Christine Cuttle, APh.A, 2215 Constitution Ave., NW, Washington, DC 20037; telephone (202) 628-4410; fax (202) 783-2351.

Mar. 21-24: PREVENTION 92: Linking Science, Policy, and Practice, Baltimore, Maryland. *Contact:* Emily Parker Slough, Meetings Manager, PREVENTION 92, 1015 15th Street, NW, Suite 403, Washington, DC 20005; telephone (202) 789-0006; fax (202) 289-8274.

Mar. 30-Apr.3: Eighth World Conference on Smoking and Health, Buenos Aires, Argentina. *Contact:* Eighth World Conference Secretariat, American Cancer Society, 1599 Clifton Rd., NE, Atlanta, GA 30329; telephone (404) 320-3333.

April

Apr. 22-24: Envirotech Vienna 1992, Vienna, Austria. *Contact:* International Society for Environmental Protection, Scientific Secretariat, Marxergasse 3/20, 1030 Vienna AUSTRIA; telephone (43 1) 715 28 28; fax (43 1) 715 28 29.

Apr. 25-29: Society of Teachers of Family Medicine: 25th Annual Conference, St. Louis, Missouri. *Contact:* Priscilla Noland, STFM, P.O. Box 8729, Kansas City, MO 64114; telephone 1-800-274-2237 ext. 4510; fax (816) 333-3884.

Apr. 28-30: Indoor Air International Conference, Athens, Greece. *Contact:* Conference Secretariat, Quality of the Indoor Environment, Unit 6, Old Brompton Road, London SW7 3DQ UK; telephone (44 71) 823 9401; fax (44 81) 780 9894.

Please submit calendar information to *Hazardous Substances and Public Health,* Agency for Toxic Substances and Disease Registry, 1600 Clifton Rd., NE, Mailstop E33, Atlanta, GA 30333; telephone (404) 639-6206; FTS 236-6206; fax (404) 639-6208.

Announcements

Meetings

NATO Advanced Research Workshop

A NATO workshop, "Use of Biomarkers in Assessing Health and Environmental Impacts of Chemical Pollutants," will be held at the Grande Hotel Das Termas De Luso, Luso, Portugal, June 1-5, 1992. The workshop will bring together international experts on biomarkers and biomonitoring to formulate a unified strategy for development and validation of biomarkers as a means of assessing the status of human and environmental health. The topics to be discussed are as follows: biomarkers of exposure; biomarkers of dose-response; molecular dosimetry; biomarkers of reproductive toxicity; biomarkers of neurological toxicity; ecological biomarkers; and directions for further research.

Interested participants and attendees may contact the director of the workshop, Dr. Curtis C. Travis, P.O. Box 2008, MS-6109, 4500S, Oak Ridge National Laboratory, Oak Ridge, TN 37831-6109; telephone (615) 576-2107; fax (615) 574-9887.

Environmental Health Exchange in Warsaw, Poland

The United States–Central and Eastern Europe Exchange for Environmental and Occupational Health plans to hold its Third Annual Symposium in Warsaw, Poland, in late June or early July 1992. The working title for the conference is "Protecting Workers, the Environment, and Health in a Market Economy: Translating Science into Policy and Action."

For more information about the symposium, please contact Dr. Barry S. Levy, Director, Program for Environment and Health, Management Sciences for Health, 400 Centre St., Newton, MA 02158; telephone (617) 527-9202; fax (617) 965-2208.

Publications

Eastern Europe Symposium Proceedings

The volume of proceedings for the 1991 symposium, "Air Pollution in Central and Eastern Europe: Health and Public Policy," held June 14-19 in Frydek-Mistek, Czechoslovakia, is now available from Management Sciences for Health. The 258-page book contains more than 30 presentations by distinguished scientists and policymakers from the region, as well as the reports of 17 working groups, and appendices on conference participants and organizations active in environmental and occupational health.

The proceedings may be ordered for $24 in the United States ($19 plus $5 for postage and handling) and $29 outside the United States from Marsha D. Spitzer, Senior Program Assistant, Program for Environment and Health, Management Sciences for Health, 400 Centre St., Newton, MA 02158; telephone (617) 527-9202; fax (617) 965-2208.

Health Studies Available to the Public

The Agency for Toxic Substances and Disease Registry (ATSDR) conducts health studies at various sites nationwide to evaluate the health effects of hazardous substances on exposed populations. The following health studies are available to the public through the National Technical Information Service (NTIS).

Mercury Exposure Study — Charleston, Tennessee (December 1990). NTIS order no. PB91151142. Cost: $19.00.

Benzene Groundwater Exposure Study — Nesmith, South Carolina (June 1991). NTIS order no. PB92123801. Cost: $17.00.

Child Lead Exposure Study — Leeds, Alabama (September 1991). NTIS order no. PB92123793. Cost: $19.00.

Philadelphia Neighborhood Lead Study — Philadelphia, Pennsylvania (September 1991). NTIS order no. PB92123777. Cost: $35.00.

To order health studies, contact NTIS, Sills Building, 5285 Port Royal Road, Springfield, VA 22151; (703) 487-4650. For more information on health studies activities, contact Sharon Campolucci, ATSDR, Mailstop E31, 1600 Clifton Road, NE, Atlanta, GA 30333; (404) 639-6200.

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